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APPLICATION NO.	FILING DATE	FIRST-NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/621,092

07/16/2003

Masanori Yoshihara

35862

9278

116

7590

05/13/2004

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EXAMINER

TRAN, THUY V

ART UNIT

PAPER NUMBER

2821

DATE MAILED: 05/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicati n No.

10/621,092

Applicant(s)

YOSHIHARA ET AL.

Examiner

THUY V. TRAN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 July 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2 sheets.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

This is a response to the Applicants' filing on 07/16/2003. Claims 1-3 are currently presented in the instant application.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Inventorship

2. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 01/12/2004 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Drawings Objections

4. The drawings are objected to because Figs. 10, 11, 12(a)-(e), and 13 are not labeled correctly.

5. Figures 10, 11, 12(a)-(e), and 13 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification Objections

6. The title of the invention is objected to since it is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested:

--MAGNETRON HAVING SPECIFIC DIMENSIONS FOR SOLVING NOISE PROBLEM--

7. The specification of the disclosure is objected to because of the following informalities:

Page 16, line 6, "13" should be changed to --19--.

Appropriate correction is required.

Claims Objections/ Minor Informalities

8. Claims 1 and 2 are objected to because of the following informalities:

Claim 1, line 5, "such" should be deleted;

Claim 1, line 10, "every one vane" should be deleted;

Claim 1, line 15, "plural" should be deleted;

Claim 1, line 22, --output sided-- should be inserted between "the" and "magnetic";

Claim 1, line 23, "the" (first occurrence) should be changed to --a--; and "the" (third occurrence) should be deleted;

Claim 1, line 24, "such" should be deleted; and replace "the" with --satisfies both--;

Claim 1, line 25, "can be established" should be deleted;

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Claim 2, line 3, "upper/lower" should be changed to --upper and lower--;

Claim 2, line 4, "such" should be deleted;

Claim 2, line 6, "upper/lower" should be changed to --upper and lower--.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fig. 11 of the Applicants' Admitted Prior Art (AAPA) in view of Kusano et al. (U.S. Patent No. 4,742,272).

With respect to claim 1, AAPA (Fig. 11) discloses a magnetron [1], in which both a strap-engaging concave portion [20a] for joining a strap ring [22] and a strap-inserting concave portion [20b] for inserting therethrough the strap ring [22] in non-contact manner are provided on an upper edge and a lower edge of each of anode vanes [20] in a manner that the strap-engaging concave portion [20a] and the strap-inserting concave portion [20b] are positionally shifted from each other along a radial direction of an anode tubular body [5], wherein the anode vanes [20] arranged along circumferential direction are electrically connected to each other while any one of a small-diameter strap ring [22] and a large-diameter strap ring [24] coaxially arranged with respect to a center axis of the anode tubular body [5] is joined to the strap-engaging concave portion [20a]; and a microwave radiating antenna [19] passing through an

output-sided magnetic piece [13] in a non-contact manner is joined to one anode vane among the plural anode vanes [20], wherein:

- a radial dimension an outer circumference of the small-diameter strap ring is designated as "Rs1";
- a radial dimension an inner circumference of the large-diameter strap ring is designated as "Rs2";
- a radius of a circumference inscribed to tip portions of the anode vanes is designated as "Ra"; and
- a radius of a central flat portion of the output sided magnetic piece located in a vicinity of each of the anode vanes is designated as "Rp".

Fig. 11 of the AAPA further shows that $Rs1 < Rp < Rs2$. However, Fig. 11 of the AAPA does not show a condition that is $1.85Ra \leq (Rs1+Rs2)/2 \leq 1.96Ra$.

Kusano et al. discloses a magnetron with a specific designation of dimensions such that $1.75Ra \leq (Rs1+Rs2)/2 \leq 1.95Ra$ (see col. 4, lines 11-30) which is within the claimed range.

It would have been obvious to one of ordinary skill in the art at the time of the invention to implement the magnetron of Fig. 11 of the AAPA with a specific designation of dimensions such as $1.75Ra \leq (Rs1+Rs2)/2 \leq 1.95Ra$, which is within the claimed range, as taught by Kusano et al. to achieve satisfaction in leakage prevention against spurious microwave or harmonics since Kusano et al. teaches that such a range of mean diameters (e.g. 1.75 to 1.95 times the vane's inner diameter) is effective for the leakage suppression of the second through fourth harmonics (see col. 2, lines 43-46) and also for the reduction of the leakage of the fifth harmonics (see col. 4, lines 23-28).

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With respect to claim 2, Fig. 11 of the AAPA appears to show that a depth dimension of the strap-engaging concave portions [20a] provided on the upper and lower edges of each of the anode vanes [20] is set in a manner that the strap rings [22, 24] engaged with the strap-engaging concave portions [20a] are sunk inwardly with respect to the upper and lower edges of each of the anode vanes [20].

11. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fig. 11 of the Applicants' Admitted Prior Art (AAPA) in view of Kusano et al. (U.S. Patent No. 4,742,272) as applied to claim 1 above, and further in view of Aiga et al. (U.S. Patent No. 5,049,782).

With respect to claim 3, the combination of Fig. 11 of the AAPA and Kusano et al. disclose all of the claimed subject matter, as expressly recited in claim 1, except for an interval along an axial direction between an output-sided end hat provided on one edge of a cathode and the upper edge of each of the anode vanes being set to 0.2 to 0.4 mm.

Aiga et al. discloses a magnetron wherein a distance along an axial direction between an output-sided end hat provided on one edge of a cathode and an upper edge of each of the anode vanes is set to 0.2 to 0.4 mm (see col. 3, lines 55-59).

It would have been obvious to one of ordinary skills in the art at the time of the invention to implement the magnetron of the combination of Fig. 11 of the AAPA and Kusano et al. by setting the distance along an axial direction between an output-sided end hat provided on one edge of a cathode and an upper edge of each of the anode vanes within a range of 0.2 to 0.4 mm to suppress undesired high harmonics as well as cathode back bombardment since such a

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distance range for the stated purpose has been well known in the art as evidenced by the teachings of Aiga et al. (see col. 3, lines 4-6; col. 4, lines 55-58).

Citation of relevant prior art

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Prior art Hoh (U.S. Patent No. 6,078,141) discloses a magnetron with improved vanes.

Prior art Aiga et al. (U.S. Patent No. 5,180,946) discloses a magnetron.

Prior art Aiga et al. (U.S. Patent No. 4,720,659) discloses a magnetron.

Prior art Takada et al. (U.S. Patent No. 4,705,989) discloses a magnetron.

Prior art Aiga et al. (U.S. Patent No. 5,180,946) discloses a magnetron.

Inquiry

Any inquiry concerning this communication or earlier communications from the examiner should be directed to THUY V. TRAN whose telephone number is (571) 272-1828.

The examiner can normally be reached on M-F (8:30 AM-6:00 PM).

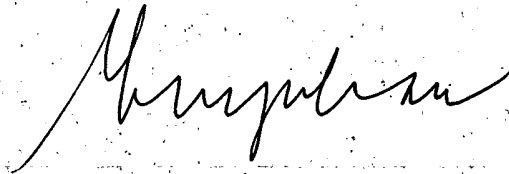
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, DON K. WONG can be reached on (571) 272-1834. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

THUY V. TRAN
Examiner
Art Unit 2821

T.T.
05/02/2004

A handwritten signature in black ink, appearing to read 'Thuy V. Tran', is written over a horizontal line.